

DATE E-FILED: August 8, 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Laurent EL GHAOUI et al.

Appl. No. 10/568,094

Filed: August 13, 2004

For: **APPARATUS AND METHOD
FOR CLASSIFYING MULTI-
DIMENSIONAL
BIOLOGICAL DATA**

Art Unit: 1631

Confirmation No.: 8148

Examiner: Not Yet Assigned

Atty. Docket: 03916.0043.PCUS01

Information Disclosure Statement

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith. It is further understood that the Examiner will consider information that had been cited by or submitted to the U.S. Patent and Trademark Office in a prior application relied on under 35 U.S.C. § 120. 1138 OG 37, 38 (May 19, 1992).

Applicants have checked the appropriate boxes below.

- 1. This Information Disclosure Statement is being filed;
 - ☐ a. Within three months of the U.S. filing date of a national application other than a continued prosecution application under §1.53(d);
 - ☐ b. Within three months of the date of entry of the national stage as set forth in §1.491 in an international application;
 - c. Before the mailing date of a first Office Action on the merits;
 - ☐ d. Before the mailing of a first Office Action after filing of a request for continued examination under § 1.115.

No statement under 37 C.F.R. § 1.97(e) or fee is required.

or;

- ☐ 2. This Information Disclosure Statement is being filed after the period specified in paragraph 1(a)-1(d) above, but before the mailing date of a Final Rejection or Notice of Allowance, or action that otherwise closes prosecution in the application, and
 - ☐ a. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1), or

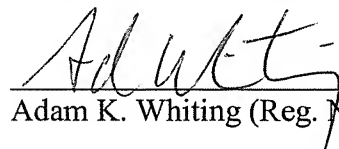
- ☐ b. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2), or
- ☐ c. The U.S. Patent and Trademark Office is hereby authorized to charge our Deposit Account No. 08-3038 the amount of \$_____ in payment of the fee under 37 C.F.R. § 1.17(p), referencing docket number _____.
- ☐ 3. This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection or Notice of Allowance, but on or before payment of the Issue Fee. Attached is our Check No. _____ in the amount of \$ _____ in payment of the fee under 37 C.F.R. § 1.17(i), and
- ☐ a. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1), or
- ☐ b. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

- ☐ 4. Relevance of the non-English language document(s) is discussed in the present specification.
- ☐ 5. The document(s) was/were cited in a corresponding foreign application. An English language version of the foreign search report is attached for the Examiner's information.
- ☐ 6. A concise explanation of the relevance of the non-English language document(s) appears below:
- ☐ 7. The Examiner's attention is directed to co-pending U.S. Patent Application No. _____, filed _____, which is directed to related technical subject matter. The identification of this U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the art cited therein during examination.
- ☐ 8. Copies of the documents were cited by or submitted to the Office in Application No. _____, filed _____, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus, copies of these documents are not attached. 37 C.F.R. § 1.98(d).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449, and to indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 08-3038 referencing docket number 03916.0043.PCUS01.

Respectfully submitted,


Adam K. Whiting (Reg. No. 44,400)

Date: August 8, 2007

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| LIST OF REFERENCES CITED BY APPLICANT <i>(Use several sheets if necessary)</i> PTO FORM 1449 | ATTY. DOCKET NO. | APPLICATION NO. |
| | 03916.0043.PCUS01 | 10/568,094 |
| | APPLICANT | |
| | Laurent EL GHAOUI | |
| | FILING DATE | GROUP |
| | August 13, 2004 | 1631 |

| U.S. PATENT DOCUMENTS | | | | | | | | |
|---|-----|---|------------|--------------------|-------|----------|-------------------------------|----|
| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | NAME\ | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE | |
| | 1. | 5,390,154 | 07-1999 | Thalhammer-Reyero | | | | |
| | 2. | 6,291,182 | 09-2001 | Schork et al. | | | | |
| | 3. | 2003/0093393 | 05-2003 | Mangasarian et al. | | | | |
| | 4. | 2003/0180808 | 09-2003 | Natsoulis | | | | |
| | 5. | 2004/0259764 | 12-2004 | Tugendreich et al. | | | | |
| | 6. | 2005/0060102 | 03-2005 | O'Reilly et al. | | | | |
| FOREIGN PATENT DOCUMENTS | | | | | | | | |
| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
| | | | | | | | YES | NO |
| | 7. | WO 96/23078 | 08/01/1996 | PCT | | | | |
| | 8. | EP 0 935 210 A2 | 08/02/1999 | EP | | | | |
| | 9. | WO 00/50889 | 08/31/2000 | PCT | | | | |
| | 10. | WO 00/65421 | 11/02/2000 | PCT | | | | |
| | 11. | WO 99/58720 | 11/18/1999 | PCT | | | | |
| OTHER REFERENCES | | | | | | | | |
| <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i> | | | | | | | | |
| | 12. | SORACE J <i>et al.</i> , "Functional Bioinformatics: The Cellular Response Database", <i>Frontiers in Bioscience</i> , Vol. <u>2</u> , (1997), pp. 31-36 | | | | | | |
| | 13. | WEINSTEIN J <i>et al.</i> , "An Information-Intensive Approach to the Molecular Pharmacology of Cancer", <i>Science</i> , Vol. <u>275</u> , (1997), pp. 343-349 | | | | | | |
| | 14. | Rifkin and Klautau, "In Defense of One-Vs-All Classification," <i>Journal of Machine Learning Research</i> 5: 101-141 (2004). | | | | | | |
| | 15. | Bredensteiner <i>et al.</i> , "Multicategory Classification by Support Vector Machines," <i>Computational Optimization and Applications</i> , 12: 53-79 (1999) | | | | | | |
| | 16. | El Ghaoui, <i>et al.</i> , "Robust classifiers with interval data," <i>Report # UCB/CSD-03-1279, Computer Science Division (EECS)</i> , University of California, Berkeley, California (2003) | | | | | | |
| | 17. | Brown <i>et al.</i> , "Knowledge-based analysis of microarray gene expression data by using support vector machines," <i>Proc Natl Acad Sci U S A</i> 97 : 262-267 (2000) | | | | | | |

EXAMINER:

DATE CONSIDERED:

EXAMINER: Initial if citation considered, whether or not the citation conforms with MPEP 609. Draw a line through the citation if not in conformance and not considered. Include a copy of this form with next communication to applicant.

*If an asterisk is placed beside the reference number, a copy is not provided because the reference was previously cited by or submitted to the PTO in a prior application that is identical in the statement and relied upon for an earlier filing date under 35 U.S.C. §120. 37 C.F.R. §1.98 (d).

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|--|-----|---|---------|-----------------|-------|----------|-------------------------------|
| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | NAME\ | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
| | 18. | 4,562,157 | 12-1985 | Lowe et al. | | | |
| | 19. | 5,143,854 | 09-1992 | Pirrung et al. | | | |
| | 20. | 5,474,796 | 12-1995 | Brennan | | | |
| | 21. | 5,556,961 | 09-1996 | Foote et al. | | | |
| | 22. | 5,569,588 | 10-1996 | Ashby et al. | | | |
| | 23. | 5,807,522 | 09-1998 | Brown et al. | | | |
| | 24. | 5,968,740 | 10-1999 | Fodor et al. | | | |
| | 25. | 2002/0042681 A1 | 04-2000 | Califano et al. | | | |
| | 26. | 2002/0095260 A1 | 07-2000 | Huyn | | | |
| | 27. | 6,134,344 | 10-2000 | Burges | | | |
| | 28. | 6,128,608 | 10-2000 | Barnhill | | | |
| | 29. | 6,157,921 | 12-2000 | Barnhill | | | |
| | 30. | 2002/0012921 A1 | 01-2002 | Stanton Jr. | | | |
| FOREIGN PATENT DOCUMENTS | | | | | | | |
| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION YES NO |
| | 31. | WO 99/42813 | 08-1999 | PCT | | | |
| | 32. | WO 05/017807 | 02-2005 | PCT | | | |
| OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.) | | | | | | | |
| | 33. | Golub et al., "Molecular Classification of Cancer: Class Discovery and Class Prediction by Gene Expression Monitoring," Science 286: 531-37 (Oct. 1999). | | | | | |
| | 34. | Natsoulis et al., "Classification of a large microarray data set: Algorithm comparison and analysis of drug signatures," Genome Research 15(5):724-36 (May 2005). | | | | | |
| | 35. | Wolfiger et al., "Assessing Gene Significance from cDNA Microarray Expression Data via Mixed Models," J. Computational Biol. 8(6); 625-37 (2001). | | | | | |

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| U.S. PATENT DOCUMENTS | | | | | | | |
|-----------------------|-----|-----------------|---------|--------------------------|-------|----------|-------------------------------|
| *EXAMINER INITIAL | | DOCUMENT NUMBER | DATE | NAME\ | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
| | 36. | 6,427,141 | 07-2002 | Barnhill | | | |
| | 37. | 2002/0119462 A1 | 08-2002 | Mendrick et al. | | | |
| | 38. | 2002/0111742 A1 | 08-2002 | Rocke et al. | | | |
| | 39. | 6,453,241 | 09-2002 | Bassett Jr. et al. | | | |
| | 40. | 6,505,125 | 01-2003 | Ho | | | |
| | 41. | 2003/0172043 A1 | 09-2003 | Guyon <i>et al.</i> , | | | |
| | 42. | 6,635,423 | 10-2003 | Dooley et al. | | | |
| | 43. | 2003/0211486 A1 | 11-2003 | Frudakis <i>et al.</i> , | | | |
| | 44. | 6,658,395 | 12-2003 | Barnhill | | | |
| | 45. | 6,714,925 | 03-2004 | Barnhill et al. | | | |
| | 46. | 2004/0128080 A1 | 07-2004 | Tolley | | | |
| | 47. | 6,760,715 | 07-2004 | Barnhill et al. | | | |
| | 48. | 6,789,069 | 09-2004 | Barnhill et al. | | | |
| | 49. | 2004/0234995 A1 | 11-2004 | Musick et al. | | | |
| | 50. | 6,816,867 | 11-2004 | Jevons et al. | | | |
| | 51. | 2005/0027460 A1 | 02-2005 | Kelkar et al. | | | |
| | 52. | 2005/0130187 A1 | 07-2005 | Shin et al. | | | |
| | 53. | 7,054,755 | 05-2006 | O'Reilly et al. | | | |
| | 54. | 6,228,589 | 05-2001 | Brenner | | | |
| | 55. | 2002/0012905 A1 | 01-2002 | Snodgrass | | | |
| | 56. | 6,372,431 B1 | 04-2002 | Cunningham et al | | | |
| | 57. | 2002/0192671 A1 | 12-2002 | Castle et al | | | |
| | 58. | 6,692,916 B2 | 02-2004 | Bevilacqua et al. | | | |
| | 59. | | | | | | |

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